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BRAND LINGUISTICS:
STUDY OF SOUND SYMBOLISM AND CONSUMER LANGUAGE FLUENCY
ON BRAND NAME ATTITUDES AND PERCEPTIONS

A Thesis Presented to
the Faculty of the University Honors Program
Northeastern Illinois University

In Partial Fulfillment of the Requirements
of the NEIU Honors Program
for Graduation with Honors

Evita Subkowski
December 2019

HONORS SENIOR PROJECT
ACCEPTANCE AND APPROVAL FORM

Evita Subkowski

Brand Linguistics: Study of Sound Symbolism and Consumer Language Fluency
on Brand Name Attitudes and Perceptions

This thesis has been reviewed by the faculty of the NEIU Honors Program and is found to be in good order in content, style, and mechanical accuracy. It is accepted in partial fulfillment of the requirements of the NEIU Honors Program and graduation with honors.

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ABSTRACT

Brand names can subtly evoke the practical qualities of a product as well as the positive emotions a company hopes that consumers will feel regarding its product. Because a brand name serves as an identifier for consumers to the product itself, effective branding has the potential to increase sales and customer loyalty. Brand names are essential because they are often the consumer's first exposure to the product and for this reason they must be configured effectively. There is considerable research in this area that can guide companies toward more effective brand-naming strategies. Unfortunately, a key gap exists in this literature: little is known regarding the impact of consumers' native language and number of languages spoken, along with their degree of fluency, on their perceptions of brand names. This thesis explores how certain linguistic characteristics of brand names affect consumers' attitudes towards brands and, in the process, links the disciplines of marketing and linguistics. Specifically, this project adds to current research in cross-cultural marketing by studying the effects of sound symbolism through the creation and testing of non-existent brand names. Data were collected through an online questionnaire with 277 respondents. ANOVA and logistic regression models were used to determine significant response patterns amongst the survey participants and predict the brand name choice a person would make based on their demographics. In general, people were able to correctly identify the implied product attribute of brand names in all product categories. The results and implications for business practice are discussed at the conclusion of the thesis.

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INTRODUCTION

Branding is a part of marketing strategy that is critical to success, especially in new product introductions. Branding is defined as “a system of signs and symbols that fulfills, even if in a symbolic way, consumers' emotional, relational and/or sense of belonging needs.” (Carnevale et al, 2017, p. 581) One of the key branding decisions is the formulation of brand names, as brand names “serve to communicate the meaning of a brand and influence perception, memory, attitudes, and behavior.” (Carnevale et al., 2017, p. 572) For these reasons, it is imperative that companies strategically utilize aspects of language in order to ensure the success of their brands.

This thesis integrates the fields of marketing and linguistics into an interdisciplinary study of language and branding, area of study referred to as brand linguistics. The central research question which guides this paper is the following: *How do the linguistic characteristics of a brand name affect the attitude towards and perception of the brand?* In answering this question, special attention will be given to the number and variety of languages people speak and to what extent that influences brand attitudes and perceptions. Consequently, a derived research question that coincides with this is: *How does the native language and other languages spoken by the consumer impact brand perceptions?* The focus on the various languages that people speak fills a gap in current research in this area because previous literature in brand linguistics and sound symbolism did not shed light on this factor. The findings have implications for marketing practice and will be useful to companies with their own brand names who are considering brand name extensions, as well as for branding decisions for products that are in the development stage. More specifically, marketers may be able to use the findings

from this study to formulate brand names that will be successful on a global scale by incorporating specific linguistic aspects into their brand names so that consumers will associate that product with the intended product attribute. This will lead to more positive attitudes toward the brand itself as well as increased probability of purchase.

The structure of this thesis is as follows. First, a literature review provides an overview of definitions and research previously done in the area of brand linguistics and sound symbolism. This includes statements of hypotheses. This is followed by a methodology section that describes data collection using surveys and analysis. Survey questions use brand names that were specifically created to test the six sound categories in sound symbolism: high-front vs. low-back vowels, (voiced vs. voiceless) fricatives, (voiced vs. voiceless) plosives/stops, nasal sounds, (voiced vs. voiceless) affricates, and approximants. These brand names are used in questions that measure consumer attitudes towards and perceptions of each of these linguistic aspects. Finally, the results are discussed, concluding with the implications for marketing practice.

LITERATURE REVIEW

Marketing strategy has been referred to as a craft, which evokes elements of creative expression – or art – as well as scientific rigor (Mintzberg, 1987). Many marketing decisions, especially in the areas of marketing communication, product design, and branding, involve creative decision-making. They incorporate both strategic and creative aspects by considering visual and rhetorical devices that can enhance the features of the product (whether a tangible good or an intangible service).

By the same token, language is an art central to human communication. Language is defined as “a system of communication based upon words and the

combination of words into sentences” and is “characterized by (a) the double articulation of form and meaning, which means that the combination of a small set of sounds can represent an infinite number of meanings in a relatively arbitrary way, and (b) syntax” (Carnevale et al., 2017, p. 587). In some ways, language can be considered on a universal level, as the way humans communicate with one another is unique from any other living organism (Anderson, n.d.). Yet, amidst the wide umbrella of human language there is much diversity as people from different regions developed their own languages over time. The current count of living languages is 7,106, although the distribution is not uniform across all areas of the world (*Day Translations, Inc.*, n.d.). For example, there are 2,303 living languages in Asia but only 285 across all of Europe (*Day Translations, Inc.*, n.d.). Furthermore, Mandarin Chinese has the most native speakers (917 million) due to China’s large population but is only spoken in 29 countries; this is in contrast with English’s 379 million native speakers and 753 million non-native speakers, which makes up 1.132 billion English speakers overall (the most of any language) across 146 countries (Eberhard et al., 2019b).

With thousands of languages existing in the world, linguists developed a system to organize them, known as language families. A language family consists of languages that are “genetically related” to some extent (Anderson, n.d.). There are 142 language families in total that comprise the over 7,000 languages of the world, but the six major language families, namely Indo-European, Afro-Asiatic, Niger-Congo, Austronesian, Sino-Tibetan, and Trans-New Guinea, account for two-thirds of all languages and five-sixths of the world’s population (Eberhard et al., 2019a). Niger-Congo, with 1,526 languages, is the largest language family by language count despite having a population

of just 520 million speakers; this is in contrast with the Indo-European language family, which has 3.24 billion speakers and is the largest language family population-wise despite comprising of only 445 languages (Eberhard et al., 2019a).

The field of brand linguistics is the intersection of marketing and language. Brand linguistics can be defined as “the interdisciplinary study of how language influences the consumer psychology of brands” and can be considered an area of study within consumer behavior (Carnevale et al., 2017, p. 587).

Brand names are an avenue through which to marry the arts of marketing and language. A “brand” is defined as a “name, symbol, design, or mark that enhances the value of a product beyond its functional purpose” (Farquhar, 1989, p. 25). Brand names are at the heart of the product that is being sold because oftentimes the primary encounter consumers have with a product is through seeing or hearing its brand name. Brand names have been considered “the most valuable assets” (Schiffman, 2019, p. 140) when it comes to marketing because of the legacy they hold for the product they represent. Consumers will tell others about the products they buy, and a brand’s name can help that product either live on or die out. Brand names are important because they link consumers to the product itself by serving as identifiers as well as generating associations of the brand with specific attributes (Hillenbrand et al., 2013). Given the key role of brand names and the resources required and the risks involved in rebranding, which helps “[create] new image and position” for the consumer and “attain brand value,” it is important that these decisions be made thoughtfully before launching the product (Zahid & Raja, 2014, p. 58). In addition, a strong brand name can reduce marketing expenditure in other areas (e.g., promotion) and build brand equity, which is the “added value” a brand gives a product

(Hillenbrand et al., 2013; Farquhar, 1989, p. 24). Thus, brand names are the center of a company because that company's success can very easily revolve around how well the brand name is received by the public (Klink, 2000). For all these reasons, brand names are extremely critical to the success of a product and even its longevity; therefore, they must be chosen wisely.

In order for a brand name to be successful, current research provides certain criteria that should be met.

Semantics. First of all, the brand name should convey meaning about the product's attributes (Klink, 2001). For example, the brand name Duracell is composed of two parts: "dura" (representing the durability of the batteries); and "cell" (i.e., cell batteries; Hillenbrand et al., 2013). With a name such as this, consumers can immediately identify what the product's intended features are, and this can even have the positive effects of increasing familiarity with and preference for that brand. On the other hand, if a brand name conveys absolutely nothing about what the product has to offer, consumers are less likely to choose that brand because they may be unsure or confused about what makes that product stand out when compared to others. This particular method of configuring a brand name so that it integrates words or parts of words to convey meaning about the brand name is called semantics (Klink, 2001). More specifically, semantic appositeness, or the "fit between the brand name and product attributes or function" (Lowrey, et al., 2003, p. 9), has been proven through various studies to increase brand name recall and memorability (Lowrey, et al., 2003) and therefore has been recommended to companies as a strategy to develop stronger, longer-lasting brands (Klink, 2000). However, it has also been found that brand name

“suggestiveness” relies heavily on the consumer’s fluency in a given language (Klink, 2000). For instance, if a consumer does not understand what the English words “durable” and “built” mean, the semantic meaning behind the brand name “Durabilt” (conveying durability) is lost. Thus, semantic appositeness is recommended in order to increase brand recall.

Distinctiveness. In addition to being memorable, a brand name should also be distinctive (Klink, 2001). Distinctiveness in brand names is achieved by forming words or parts of a word that are “novel or unique” (Lowrey et al., 2003, p. 8). Distinctiveness cannot be under-appreciated because the more distinctive a brand name is, the easier it is to be recalled and the more likely consumers are to choose that brand over others (Lowrey et al., 2003). Brand name distinctiveness has other positive effects. It also aides in having the brand name protected by trademarks so that other companies do not borrow or steal parts from another brand’s name (Klink, 2001). Having a brand name that is readily distinguishable from others also eliminates confusion consumers might experience among brand names that sound too alike; otherwise, a consumer may mistake one brand for another that sounds quite similar to it.

However, one must be cautious not to make the brand name so inimitable that it is too hard to pronounce, spell, or otherwise recall, as these are other features of good brand names that should be taken into account when configuring a brand name (Klink, 2001). For instance, a brand name that contains many letters that are infrequent in a language (i.e., “x,” “q,” and “z”) all in the same word might be so strange and unfamiliar that consumers would likely have a hard time accepting this brand name, and, thus, that brand would be unpopular. This idea refers to the recognition heuristic, which states that it is

easier to remember/recall/recognize a word (in this case a brand name) that contains letters and/or syllables that people come across often in everyday language (Rubenwolf and Spörrle, 2011). In fact, a recent study done on recognition heuristics in Germany proved that, on the basis that the letter “E” occurs with a higher frequency than the letter “U,” consumers were much more likely to prefer brand names containing the letter “E” (e.g., “Mel”) as opposed to the letter “U” (e.g., “Mul”), and these results occurred regardless of whether the brand names in the study were real or fictitious (Rubenwolf and Spörrle, 2011).

While all of the aforementioned brand name aspects are important to the field of brand linguistics, the focus of this thesis is primarily on the phenomenon of sound symbolism. Sound symbolism is “the linguistic process in which the sounds of a word provide cues about the word’s meaning” (Yorkston and Menon, 2004, p. 43); simply put, it is the “direct linkage between sound and meaning” (Klink, 2001, p. 28). It involves “imbedding sounds of individual letters or combinations of letters in the brand name to convey meaning” (Klink, 2001, p. 27). Also called phonetic symbolism, it includes the presence and process of phonemes, which are the “fundamental building blocks of sound in a language,” and their ability to “convey information on their own” (Lowrey et al., 2003, p. 8).

Sound symbolism has been found to occur across the six main continents (e.g., North America, South America, Africa, Asia, Europe, and Australia) in languages such as English, Spanish, French, German, Finnish, Greek, and Japanese (Yorkston and Menon, 2004). Previous research has discovered that diminutive-form words in nearly ninety percent of languages sampled were similar in their vowel sounds (Ultan, 1978; Klink,

2000; Klink, 2001). For instance, words that mean “smallness” contain letters with high acoustic frequency in many languages, e.g., ‘teeny’ (English), ‘chico’ (Spanish), ‘petit’ (French), ‘mikros’ (Greek), and ‘chiisai’ (Japanese; Ohala, 1984; Klink, 2000).

Conversely, words that mean “largeness” contain letters with low acoustic frequency in many languages, e.g., ‘humongous’ (English), ‘gordo’ (Spanish), ‘grand’ (French), ‘makros’ (Greek), and ‘ookii’ (Japanese; Ohala, 1984; Klink, 2000).

There are six main categories of sound symbolism. These are: high front vs. low back vowels; voiced vs. voiceless stops/plosives; voiced vs. voiceless fricatives; nasals; affricates; and approximants. Each of these sound symbolism categories will now be briefly described.

High-front versus low-back vowels. First, the category of vowel sounds is split into two parts: high-front vowels and low-back vowels. This distinction is made with respect to the location of the highest point of the tongue during sound pronunciation (Klink, 2000). A sound hierarchy ordering various vowel sounds from high-front to low-back by decreasing frequency (in terms of pitch) is: “[ē], [i], [e], [ā], [a], [ō], [o], [ā], [u], and [ü] (e.g., beat, bit, bet, bait, bat, boat, bought, posh, but, put, and boot)”, and this also occurs across numerous languages around the globe (Yorkston and Menon, 2004, p. 44). In general, the pattern shows that vowel sounds containing the letters “e” and “i” are of higher frequency than vowel sounds containing “o” and “u”, and vowel sounds with the letter “a” tend to fall in the middle of the spectrum.

The frequency/pitch of the vowel sounds in words indicates certain characteristics of the things these words represent. In a marketing context, the brand name containing vowel sounds with a generally high frequency will suggest product characteristics

different from those of a brand name with generally low frequency vowel sounds. As such, the high-front vowels, which have higher frequency, are considered to portray traits such as friendliness, femininity, quickness, and lightness (Morton, 1994; Ohala, 1994; Hinton et al., 1994; Klink 2000, 2003; Pogacar et al., 2014). Conversely, the low-back vowels, which have lower frequency, tend to convey characteristics such as harshness, masculinity, slowness, and darkness (Morton, 1994; Ohala, 1994; Hinton et al., 1994; Klink 2000, 2003; Pogacar et al., 2014). Moreover, these vowel sounds also imply what is referred to as size symbolism. In particular, the high-front vowel sounds found in words like “flea” and “fly” are associated with smaller size and less power, whereas low-back vowel sounds found in words like “bout” and “boot” connote larger size and more power (Hinton et al., 1994; Makino et al., 1999; Yorkston and Menon, 2004). All of this informs the thought that products with brand names beginning with high-front vowels will be perceived as possessing more diminutive qualities than those with low-back vowels. This leads to the first hypothesis:

H1(a-c): Products with brand names containing high-front vowel sounds as opposed to low-back vowel sounds are perceived as (a) smaller, (b) lighter, and (c) thinner, regardless of other languages known by the respondent.

Another experience that explores the sound symbolism behind high-front and low-back vowels is called the Bouba vs. Kiki Effect. In this experiment, participants looking at two shapes side-by-side, one round and the other pointy, were asked to name which shape was called “Bouba” and which was called “Kiki”; ninety-five percent responded that Bouba was the round shape while Kiki was the pointy shape, and this response occurred no matter the age (e.g., adult or child) or primary language (e.g.,

English, Swahili, or Bantu) of the respondent (Maurer et al., 2006; Pogacar et al., 2014).

This shows that the majority of people already have a preconception in their minds of what they expect a round versus pointy figure to be called; the low-back vowel sound of “Bouba” was deemed to be round while the high-front vowel sound of “Kiki” represented a more angular shape (Pogacar et al., 2014).

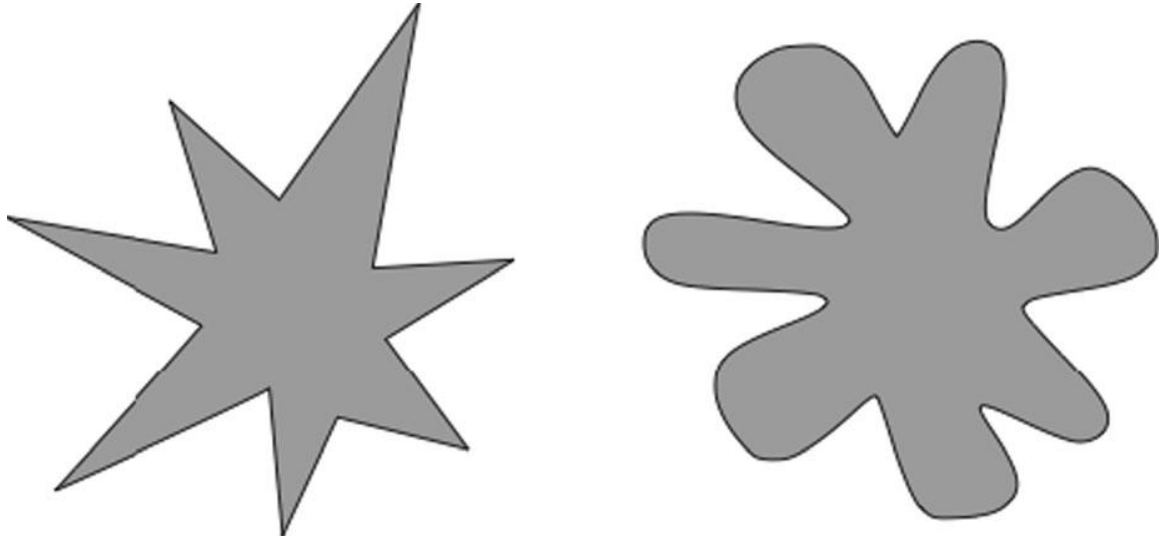


Figure 1: The Bouba vs. Kiki Effect. Source: Köhler, 1929; Pogacar et al., 2014

Voiced versus voiceless stops/plosives. Second, besides the vowel sounds there are also consonant sounds in a language. One category of consonant sounds is called stops or plosives. These two words (stops and plosives) represent two different ways to say the same thing; they have the same meaning, so they will be used interchangeably. Plosives are sounds formed by a complete stoppage of air in the mouth (Pogacar et al., 2014). Plosives are further broken down into two parts: voiced versus voiceless. Voiced sounds occur when the vocal cords are vibrating, whereas voiceless sounds are formed when the vocal cords are separated from one another (Clark and Yallop, 1990; Klink, 2000). The letters that represent voiced stops/plosives are “b” (e.g., “Bayer”), “d” (e.g.,

“Duracell”), and “g” (e.g., “Gatorade”), while the letters “p” (e.g., “Powerade”), “t” (e.g., “Tide”), and “k” (e.g., “Kraft”) or hard “c” (e.g., “Cottonelle”) characterize voiceless stops/plosives (Ladefoged, 1975; Klink, 2000).

The use of plosives in brand names has several benefits. Because of the explosiveness of the sound plosives make when pronounced, especially to start a word (e.g., “Kellogg’s”), “brand name memory (Lowrey et al., 2003), recognition, and recall (Cortese, 1998) increase” (Vanden Bergh et al., 1984; Klink, 2000, 2001; Pogacar et al., 2014). This is likely why brand names beginning with plosives have been and continue to be commonplace (Vanden Bergh et al., 1987). In fact, this realization began with a content analysis that discovered that the top brands from 1975-1979 mainly began with the letters ‘a’, ‘b’, ‘c’, ‘k’, ‘m’, ‘p’, and ‘s’ – four of which classify as plosives (Schloss, 1981; Klink, 2000).

The letter ‘k’ is of special interest, as it turns out to be one of the most popular plosives to place at the beginning of brand names. The same aforementioned content analysis, which examined the top 200 brands over five years, also revealed that the letter ‘k’ as a brand-initial (i.e., the first letter in the brand name) was more predominant than any other letter in that context (Schloss, 1981; Lowrey et al., 2003). Moreover, the abundance of the letter ‘k’ as a brand-initial occurred more than would be expected based on the frequency of the letter ‘k’ in English (Schloss, 1981; Lowrey et al., 2003). This directly contradicts the results of the recognition heuristic experiment by Rubenwolf and Spörrle (2011) which stated that letters that occur more frequently in a language are preferred to be included in brand names because of the familiarity with these letters in everyday life. Nevertheless, others suggest it is better to implement letters in brand

names that occur less frequently in a language because of their “uniqueness” and, in the case of the letter ‘k’, its “versatility” when combined with other letters, both of which can increase brand name memorability (Vanden Bergh, 1990; Lowrey et al., 2003).

One other interesting part to examine in relation to plosives is their level of pleasantness. Curiously, plosives were found to start about seventy-five percent of “positive English nicknames” (De Klerk and Bosch, 1997; Pogacar et al., 2014). Yet, in other studies, plosives were more likely to be perceived as unpleasant rather than pleasant (Johnson et al., 1964; Pogacar et al., 2014). In particular, when examining “bad” words it was discovered that plosives were “significantly” present within them (Jenkins et al., 1958; Pogacar et al., 2014). Moreover, this pattern can be observed across languages: English with the letters “b”, “d”, and hard “c”; Spanish and Italian with the letters “p” and hard “c”; Polish and Russian with the letter “k”; the list goes on and on (Lewis, 2019). For this reason, it is expected that products with brand names beginning with stops/plosives will be perceived as harsher than those beginning with fricatives.

Fricatives. Following is the category of consonant sounds that is also often contrasted against stops/plosives: fricatives. Fricatives are different from stops/plosives because of the way they are articulated; the extent of closure of the mouth via articulators (i.e., teeth, tongue, and lips) is greater for plosives than for fricatives (Klink, 2001). Stops have complete closure of articulators so airflow does not escape the mouth, but fricatives are formed by restricting rather than completely stopping airflow (Klink, 2000, 2001). However, in comparison to stops, fricatives are also subdivided into voiced versus voiceless sounds (with the same meanings attached). Voiced fricatives are represented by the letters “v” (e.g., “Vicks”) and “z” (e.g., “Zest”), while voiceless fricatives are

characterized by the letters “f” (e.g., “Febreze”) and “s” (e.g., “Staples”; Ladefoged, 1975; Klink, 2000).

As is the case with vowels, the frequency of consonant sounds is also believed to have an effect on the meaning conveyed (Ohala, 1984, 1994; Klink, 2000). Sounds with higher frequencies imply characteristics on a “diminutive” level, such as weightlessness, quickness, slimness, smallness, sharpness, softness, smoothness, friendliness, and femininity (Hinton et al., 1994; Klink, 2000; Yorkston & Menon, 2004). Fricatives have a higher frequency than stops/plosives (Ohala, 1994; Hinton et al., 1994; Klink, 2000); therefore, it is expected that products with brand names beginning with fricatives will be perceived as possessing more diminutive qualities than those beginning with stops/plosives. This, coupled with the information under the stops/plosives section, both lead to the second hypothesis:

H2(a-b): Products with brand names beginning with fricatives as opposed to plosives are perceived as (a) softer and (b) sharper, regardless of other languages known by the respondent.

Nasals. Next, there is the sound category referred to as nasals. Nasals are named as such because they occur when airflow is channeled through the nasal cavity of the body (Pogacar, et al., 2014). Nasals include the sounds produced by the letters “m” (e.g., “Microsoft”), “n” (e.g., “Northface”), and “ng” (e.g., “Boeing”; Pogacar, et al., 2014). While plosives were considered to sound more negative by listeners, nasal sounds were actually rated positively (Johnson et al., 1964; Pogacar et al., 2014). Specifically, the ‘m’ sound was substantially present in words regarded “good” (Jenkins et al., 1958), was the second most common brand-initial in the aforementioned content analysis (Schloss,

1981), and also the fourth most common word-initial in “positive English nicknames” (De Klerk and Bosch, 1997; Pogacar et al., 2014). This informs the idea that products with brand names containing the nasal sound “m” as opposed to the nasal sound “n” are more likely to be perceived as tasty. This leads to the third hypothesis:

H3: Products with brand names containing the nasal sound ‘m’ as opposed to the nasal sound ‘n’ are perceived as tastier, regardless of other languages known by the respondent.

Affricates. A combination of two previously discussed sound categories, stops/plosives and fricatives, is termed an affricate (Pogacar et al., 2014). Sounds under the category of affricates include “ch” (e.g., “Chase”), which combines the sounds of “t” and “sh”, and “dj” (e.g., “Gillette”), which combines the sounds of “d” and “zh” (Pogacar et al., 2014). Unlike nasals but similar to stops/plosives, affricates tend to be viewed more negatively because of the “unpleasant” sound emitted by them (Johnson et al., 1964; Pogacar et al., 2014). The reaction to affricates is comparable to that of plosives in the word-initial position because affricates are comprised of first a stop/plosive and then followed by a fricative to finish the sound. For instance, in the voiceless palato-alveolar affricate ‘tʃ’ that represents the “ch” sound, the first part of the sound is the stop “t” and the last part of the sound is the fricative “ʃ” which in English transcribes the “sh” sound (Isotalo, 2003). Therefore, the harsh explosivity present at the beginning of all affricates lends to their negative perception.

Previous research has supported the principle of sound symbolism, showing that harder or harsher sounding brand names made consumers more likely to perceive those products as harder or harsher (Heath et al., 1990; Lowrey et al., 2003). In addition, just

like fricatives and stops/plosives, affricates are also subdivided into voiced and voiceless types (Isotalo, 2003). The voiced post-alveolar affricate ‘dʒ’ and the voiced alveolar affricate ‘dʒ’ are examples of voiced affricates, while the voiceless palato-alveolar affricate ‘tʃ’ and the voiceless alveolar affricate ‘ts’ are their respective voiceless counterparts (Isotalo, 2003). In general, voiceless sounds possess higher frequencies than their voiced counterparts (Ohala, 1994; Hinton et al., 1994; Klink, 2000). As a result, it is expected that products with brand names containing voiced affricates will be perceived as possessing tougher qualities than those with voiceless affricates. This leads to the fourth hypothesis:

H4(a-b): Products with brand names containing voiced affricates as opposed to voiceless affricates are perceived as (a) heavier and (b) more masculine, regardless of other languages known by the respondent.

Approximants. Finally, the last of the six sound categories is called approximants. Approximants fall between sound categories and are represented by the letters “w” (e.g., “Walgreens”), “l” (e.g., “Lowes”), “r” (e.g., “Revlon”), and “y” (e.g., “YouTube”; Pogacar et al., 2014). Just like the preceding sound categories, approximants also subscribe to sound symbolism. For one, Plato’s dialogue hints at the effect of the letter “r” to express movement: “First, then, the letter r appears to me to be an instrument for expressing all motion.” (Plato, 1985, p. 145; Klink, 2000, 2001; Pogacar et al., 2014) We can see instances in the English language where words beginning with “r” are related to this concept of motion, as in the words “river” and “road” (Plato, 1985; Pogacar et al., 2014). The use of the letter “r” as a word-initial to signify “river” also carries over across numerous languages, such as Spanish (“río”), Bosnian (“rijeka”), Romanian (“râu”), and

Slovenian (“reka”; Katsev, n.d.) Furthermore, the approximant “w” is thought to strengthen the effect of fricatives that come before it; for instance, “wack” seems weaker than “thwack” (Hinton et al., 1994; Pogacar et al., 2014). However, compared to the other sound categories discussed above, approximants have the least amount of research in marketing applications (Pogacar et al., 2014), so there is great opportunity to learn new things through this research. Because of the suggestions regarding the approximants above, it is thought that products with brand names containing the approximants “w” and “r” are more likely to be perceived as faster and stronger than those containing the approximants “l” and “y”. This leads to the fifth hypothesis:

H5(a-b): Products with brand names containing the approximant sounds ‘w’ and ‘r’ as opposed to ‘l’ and ‘y’ are perceived as (a) faster and (b) stronger, regardless of other languages known by the respondent.

METHODOLOGY

Survey Design and Data Collection

The goal of the study was to observe the extent to which people from various demographic/lingual backgrounds are able to identify the brand attribute being implied by the brand’s name through the use of sound symbolism. To test the proposed hypotheses, a questionnaire was designed to ask people about their perceptions of some specific characteristics of products upon reading the brand names. These brand names were created specifically for this study on the basis of testing the six sound categories as outlined by the process of sound symbolism. Specifically, each brand name has a corresponding pair that differs from its partner in only one linguistic aspect (e.g., a sound symbolism aspect such as high-front vs. low-back vowel, plosive vs. fricative, etc.). In

order to test people's attitudes towards the created brand names and associate them with a product attribute (e.g., faster, tastier, more masculine, etc.), survey respondents were presented with the pairs of brand names and asked which of the two seems to better represent a given product attribute based on its name. This allowed for the testing of people's perceptions of and attitudes towards the created brand names and their ability to associate these brand names with a product attribute.

The questions regarding brand name choice were referred to as "brand name testing" questions, and they were categorized into ten perceived product attributes that were hypothesized to be dependent on the linguistic characteristics of the brand names. The first attribute is "smaller," and it is associated with the high-front vowel brand names, e.g., Fenter, versus low-back vowel brand names, e.g., Funter. To examine the association, respondents were asked which of the two names, Fenter or Funter, seem "smaller" to them. Respondents' answers to this question help to test the hypothesis that high-front vowels sound "smaller" over low-back vowels (H1a). For this category, four such binary questions were given, with the first answer option being high-front, and the second being low-back. Similarly, the second attribute is "lighter" which also has four questions in which the first answer options are brand names with high-front vowels and the second answer options are low-back vowel names. This design of providing four brand name pairs for each category is maintained for all other attributes, namely "thinner," "harsher," "sharper," "tastier," "heavier," "more masculine," "faster," and "stronger." Table 1 gives a summary of the design of the brand testing questions and the hypotheses to be tested. For the linguistic characteristics in each brand testing question, a linguistic element from the six sound categories is selected, and the first of the two

answer choices always contains the former characteristic of the pair, e.g., high-front, fricatives, “m”, voiceless affricates, and “w” and “r”, while the second choice contains the other one, e.g., low-back, plosives, “n”, voiced affricates, and “l” and “y”. The word pairs are displayed in Table 1 in such a way that, with the exception of the nasal and approximant sound categories, the first word in each word pair has a higher frequency than the second name in the pair. However, to eliminate possible bias, the order of appearance of the brand name options was randomized in the survey, i.e., the brand name with higher frequency did not always appear first to respondents.

Table 1: *Summary of Survey Hypotheses and Corresponding Developed Brand Names*

Hypothesis	Product Attribute	Linguistic Characteristic	Product Category	Word Pair 1	Word Pair 2	Word Pair 3	Word Pair 4
H1a	Smaller	High-front vs. Low-back Vowels	Laptop	Fenter-Funter	Yelta-Yolta	Ingrel-Ungrel	Lisap-Losap
H1b	Darker	High-front vs. Low-back Vowels	Wine	Tentil-Tuntil	Leda-Loda	Tirp-Turp	Piron-Poron
H1c	Thicker	High-front vs. Low-back Vowels	Tomato sauce	Vegera-Vugera	Semiri-Somiri	Ristono-Rustono	Bindeli-Bondeli
H2a	Softer	Fricatives vs. Plosives	Bedsheet	Fexil-Pexil	Silant-Tilant	Valir-Balir	Zorem-Dorem
H2b	Sharper	Fricatives vs. Plosives	Knife	Folade-Tolade	Serat-Perat	Veniri-Deniri	Zaloron-Baloron
H3	Tastier	“m” vs. “n” (Nasals)	Chocolate	Albin-Albin	Melar-Nelar	Comoro-Conoro	Tammil-Tannil
H4a	Heavier	Voiceless Affricates vs. Voiced Affricates	Pen	Tsanop-Dzanop	Chalark-Jalark	Tarnats-Tarnadz	Pelech-Pelej
H4b	More Masculine	Voiceless Affricates vs. Voiced Affricates	Cologne	Tsulo-Dzulo	Chendere-Jendere	Emets-Emedz	Dorach-Doraj
H5a	Faster	“w” & “r” vs. “l” & “y” (Approximants)	Automobile	Wender-Yender	Wiston-Liston	Raxa-Yaxa	Rumenz-Lumenz
H5b	Stronger	“w” & “r” vs. “l” & “y” (Approximants)	Medication	Wibsen-Yibsen	Wipord-Lipord	Rantimen-Yantimen	Rezest-Lezest

After the main brand name testing segment was concluded, the survey also asked informatic questions about the background of the respondents, including their gender, race, approximate weekly budget on shopping, their awareness of the concepts of “brand linguistics” and “sound symbolism,” and most importantly their language profiles. These specific questions were asked to see if any patterns exist between language(s) spoken and the attributes that might be carried over/noticed more strongly in one cultural/lingual background group versus another.

Regarding the language profiles, various aspects of the languages that the respondents use were examined. Among those, a key area of interest was whether the respondent was competent of using any other languages rather than English, and if so to what extent. Going along with this, respondents were also asked about their native language and their level of proficiency in said native language. Later, such information will be used to classify the respondents into subgroups to help make comparisons and examine in detail subsequent hypotheses derived from the five central hypotheses detailed earlier.

The official survey contains 54 questions and was hosted on Qualtrics. The complete, coded survey can be found in Appendix A.

Descriptive Statistics of the Sample

For the survey, a sample of 277 respondents was collected, which included the faculty, staff, and students of two Illinois universities. However, ten of the responses contained missing responses, so the final sample size used for analyses was 267 respondents. The sample contains 157 male respondents (58.8% of the total sample size) and 110 female respondents (41.2% of the total sample size).

On average, respondents in this sample are the most likely to spend between \$100 and \$200 per week on shopping (about 101 over the total of 267 respondents, or 36.5%).

Figure 2 below shows the spending profiles of the sample.

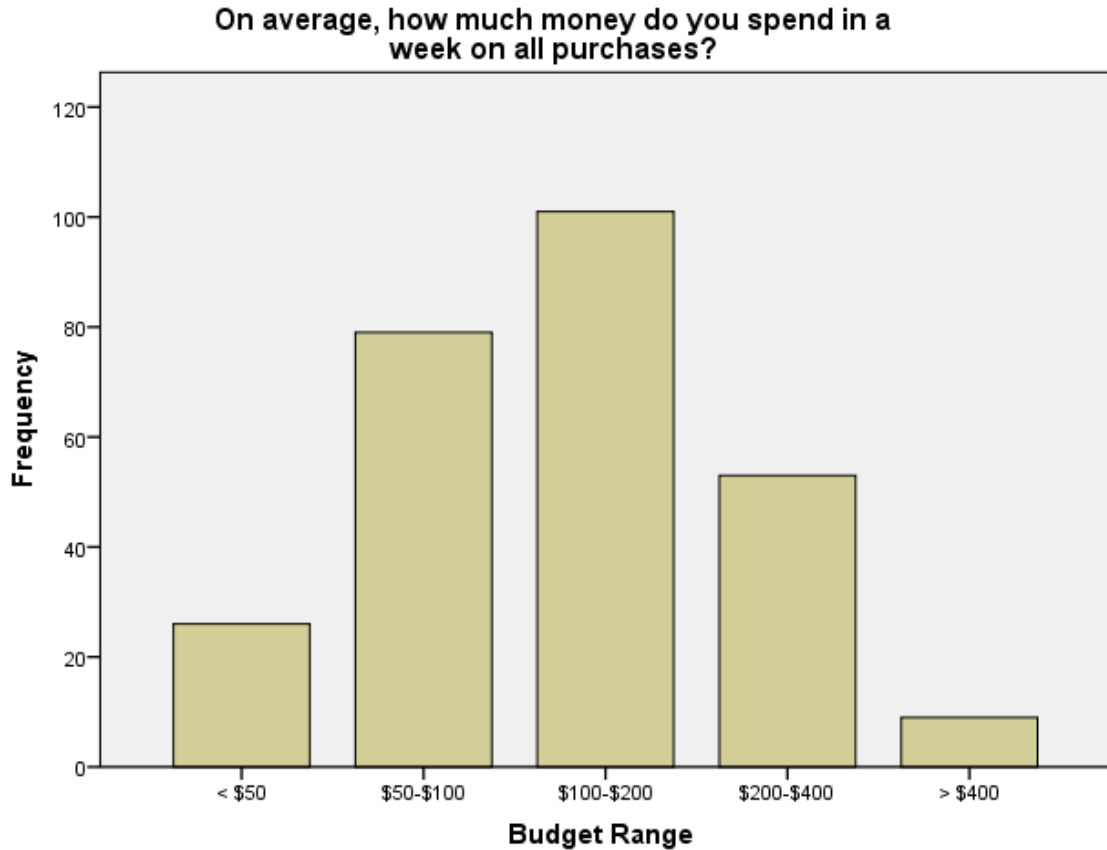


Figure 2: Budget Breakdown of Survey Respondents

In terms of awareness about the term “brand linguistics,” about 41.2% (114 respondents) said they had heard about the concept before taking the survey (see Figure 3a), while about 36.8% (102 respondents) claimed they had been aware of “sound symbolism” beforehand (see Figure 3b).

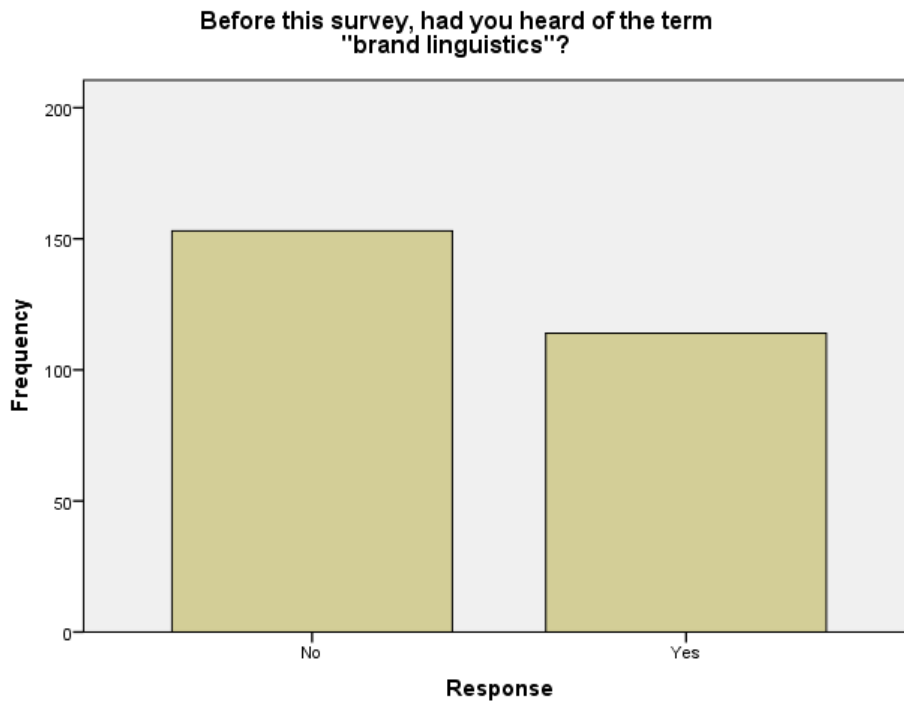


Figure 3a: Awareness of the Term “Brand Linguistics”

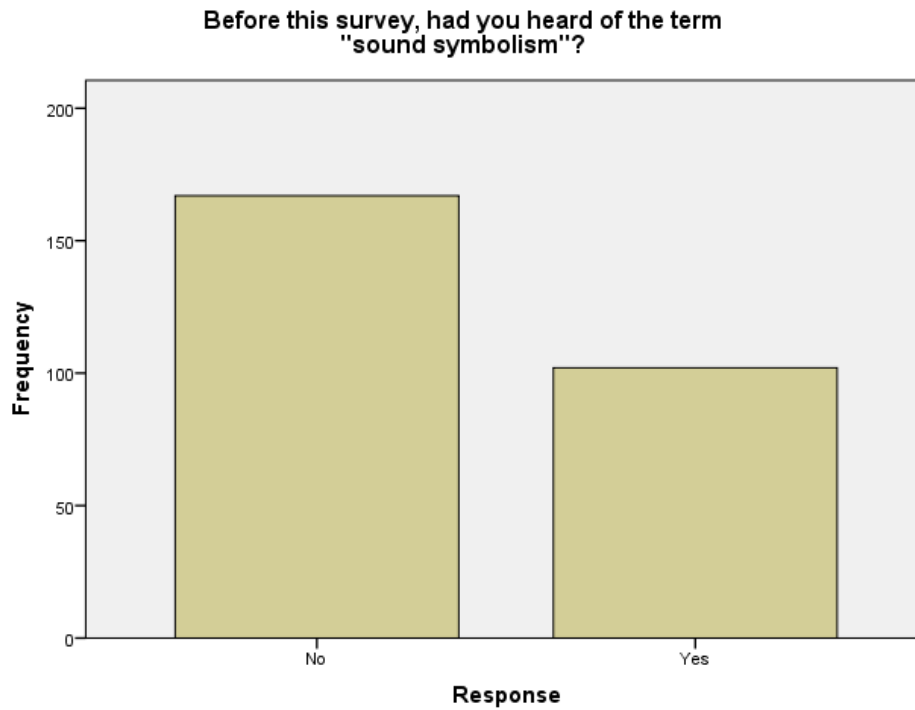


Figure 3b: Awareness of the Term “Sound Symbolism”

About 54.5% of respondents said they are fluent to some degree in at least one language besides English (see Figure 4 below).

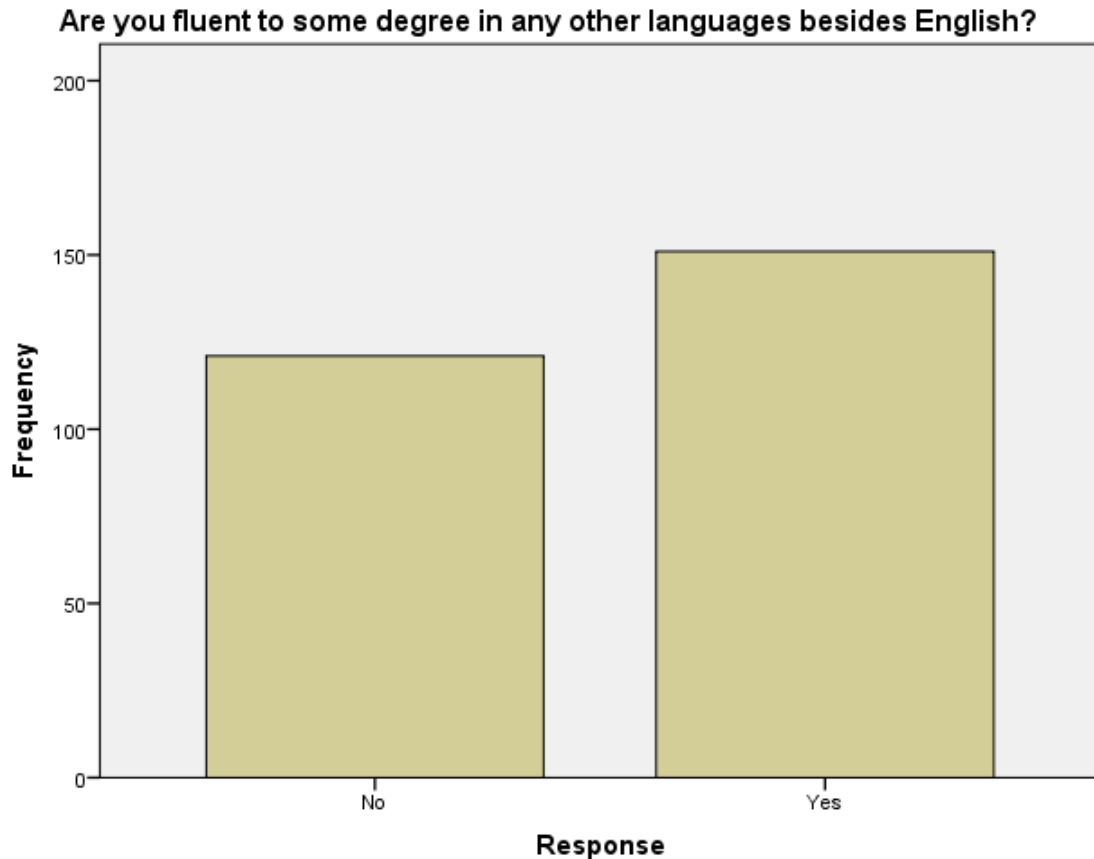


Figure 4: Respondent Fluency in Languages other than English

The respondents are native speakers from seven language families. Among those, the majority are members of the Indo-European group, which takes up 37.9% of the total sample size. The second largest language family is Dravidian (11.6%), followed by Afro-Asiatic (1.4%) and Austro-Asiatic (1.1%). This sample has a minority group of Sino-Tibetan and Tai-Kadai language family speakers (0.4% each). This is illustrated in Figure 5 below.

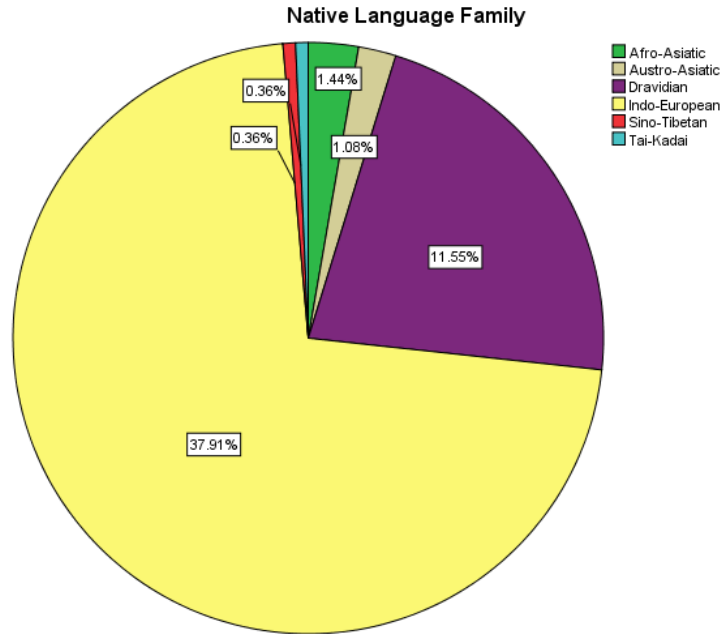


Figure 5: Breakdown of Respondent Native Language Family Membership

Data Preparation for Modeling

To test the hypotheses, first the survey answers were recoded into numeric values. For the binary yes-no questions, “yes” answers were coded into 1 while “no” answers were coded into 0. For the binary “brand name testing” questions, the first choice is coded into 1 while the second option is coded 0. Depending on the hypothesis being tested, either 1 or 0 would be the “preferable” answer which is more consistent with the prediction of the hypothesis result (see Appendix A for the complete, coded survey).

For each linguistic characteristic category, respondents were asked four brand name testing questions, and the answer to each question was scored based on the choice using the recoded values described above. For example, in the question asking whether Fenter or Funter sounds “smaller,” if a respondent responded that Fenter sounds “smaller” than Funter, a score of 1 was given for this question, since Fenter is coded as 1. There are two other similar questions in the first sound category (high-front vs. low-back

vowels). The overall score for this category of a respondent will be the sum of all the coded answers, which is a value ranging between 0 and 4. Similar overall scores were calculated for all the sound categories. These overall scores are essential to this study as they give information about the general tendency that a specific sound characteristic, such as “high-front vowel,” will be associated with the characteristic asked in the questions, in this case “smaller.” Table 2 gives the descriptive statistics of the product attribute overall scores.

Table 2: *Descriptive Statistics for Attribute Overall Scores*

Descriptive Statistics						
	N	Minimum	Maximum	Overall Category Score	Mean Overall Category Score	Std. Deviation
Smaller Questions Overall	267	0.00	4.00	668.00	2.5019	1.2547
Darker Questions Overall	266	0.00	4.00	386.00	1.4511	1.2497
Thicker Questions Overall	263	0.00	4.00	442.00	1.6806	1.3495
Softer Questions Overall	266	0.00	4.00	600.00	2.2556	1.0180
Sharper Questions Overall	265	0.00	4.00	617.00	2.3283	1.0233
Tastier Questions Overall	264	0.00	4.00	561.00	2.1250	1.1649
More Masculine Questions Overall	266	0.00	4.00	493.00	1.8534	1.0592
Heavier Questions Overall	267	0.00	4.00	504.00	1.8876	1.0344
Faster Questions Overall	267	0.00	4.00	538.00	2.0150	1.0185
Stronger Questions Overall	268	0.00	4.00	560.00	2.0896	1.0274

Furthermore, in order to test the hypotheses about whether the linguistic background of a respondent has any significant impacts on their perspectives of the brand names being tested linguistically, variables were created to evaluate different aspects of a respondent’s linguistic profile. From the respondents’ answers to the question, “Do you speak any other languages?”, each language provided as a response was classified into a bigger family that the language belongs to on the language family tree, and then each of those families was coded into a number (see Appendix B). For example, the French

language belongs to the Indo-European language family tree, and this family is coded as 2, so French is coded as 2 regarding its language family. The Spanish language also belongs to the Indo-European language family; therefore, it was also coded as 2 for its language family. Afterwards, a variable named “Other Language Families Recoded” was created to represent the language families of the languages other than English that the respondents speak. From this sample, there are three major “other language families,” including Dravidian (coded as 1), Indo-European (coded as 2), and Others (coded as 3).

Table 3a below gives the descriptive statistics of the three other language families compared to group 0 – people who speak no other language besides English. Group 0, which consists of English-only speakers, has the highest percentage in the study, making up 42.6% of the sample. However, the dominant group out of those that are fluent in another language is group 2 (Indo-European), which consists of 36.4% of the total sample population.

Table 3a: *Breakdown of Respondents’ Other Language Families Membership*

Other Language Families			
	Frequency	Percent	Cumulative Percent
0 (English Only)	55	42.6	42.6
1 (Dravidian)	19	14.7	57.4
2 (Indo-European)	47	36.4	93.8
3 (Others)	8	6.2	100
Total	129	100	
Missing System	148		
Total	277		

Similarly, Table 3b shows the descriptive statistics of the respondents’ native language families. In this case, the English language is a part of the Indo-European language family. Therefore, there are three native language families in total: Dravidian (coded as 1), Indo-European (coded as 2), and other language families (coded as 3).

Table 3b: *Breakdown of Respondents' Native Language Families Membership*

Native Language Families			
	Frequency	Percent	Cumulative Percent
Families	1 (Dravidian)	32	21.9
	2 (Indo-European)	105	71.9
	3 (Others)	9	6.2
Total		146	100
Missing System	131		
Total	277		

For each of the languages spoken by the respondents, including their native language, English, and any other language they speak, respondents were also asked a question about their proficiency levels in using the language. There are five levels of proficiency on a scale from 1 to 5, with 1 being the least and 5 being the most fluent. Consequently, there are three language fluency variables, including the “English Fluency Level,” “Native Language Fluency Level,” and “Other Language Fluency Level,” with their descriptive statistics outlined in Table 4 below.

Table 4: *Descriptive Statistics for Language Fluency Variables*

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
What is your degree of fluency in your native language?	150	2	5	4.5500	0.6410
How would you rate your fluency in the English language?	88	1	5	4.2400	0.8020
Enter the name(s) of the other language(s) you know and your degree of fluency below.	68	1	5	3.3240	1.1387
Valid N (listwise)	38				

Modeling for Hypothesis Testing

To test hypotheses 1-5, the first step involved examining the descriptive statistics of the answers to the “brand name testing” questions for each of the ten product attributes, e.g., smaller, lighter, thinner, harsher, sharper, tastier, heavier, more masculine, faster, and stronger. Since each product attribute has four brand name pair questions which are coded into 1 and 0, the mean overall total score of the four questions of each attribute category was used to interpret which brand name is perceived to link with the product attribute more by the respondents. The mean overall score of a category is calculated by taking the overall category score as shown in Table 2 and divide by the total number of respondents. The result can be found in the “Mean” column of Table 2. Then, for example, if the average overall score for the “smaller” category is more than 2.0, it means that on average more than half the respondents choose the first brand name (which is given a score of 1) to be “smaller” over the second brand name. Since the first brand name in the pair contains the first characteristic, in this case the high-front vowel, a mean overall score of higher than 2.0 would mean that on average the brand name containing the high-front vowel is more frequently perceived to sound “smaller” over the brand name containing the low-back vowel, which supports the first half of H1a.

In order to test the second part of the hypotheses about the differences between languages in perceiving product attributes based on the brand name alone, the focus was on the other languages (besides English) spoken by respondents to examine whether their language profile would have any impact on their attitudes toward and perceptions of the created brand names. ANOVA models were employed using the overall category scores listed in Table 2 as the dependent variables, and the “Other Language Families” variable,

coded into numeric values, as the independent variable. The main prediction for the hypothesis testing is that, for a sound category, if the fluency in different languages can actually influence the speaker's perception of linguistic characteristics and the implied meaning they contribute to brand names, then in that category the expectation would be a significant difference in the mean overall score of at least one of the language family groups. The results can be told from the output of the ANOVA model and are presented in the results section below.

In an attempt to expand the scope of the hypotheses, another aspect of language profile was looked at: the fluency level of the language speakers. The objective in doing so was to answer the question of whether the level of fluency in one language can change the speaker's perception of the linguistic aspects (and their meaning) in relation to the brand name. In this respect, the three aforementioned fluency variables ("English language fluency," "native language fluency," and "other language fluency") were used as independent variables in order to conduct three sets of ANOVA models upon the same dependent variables of overall category scores as from before. The results of this additional hypothesis testing will also be presented in the results section.

In a further attempt to analyze the factors that can influence the attitude towards and perception of brand names, a regression model was built using the characteristic information of a language speaker collected from the survey questions to predict how the speaker would interpret the linguistics of a brand name, using their answers to the "brand name testing" questions. Since these questions are binary, i.e., the respondent would choose either one brand name or another as their answer, a logistic regression model was chosen with the binary brand name testing choice being the dependent variable, and a list

of characteristic variables as independent variables to help predict the answer choice for the brand name testing question.

The hypothetical logistic regression model for the attitude towards and perception of a brand name is as follows:

$$\begin{aligned} \text{BrandNameChoice} = & \beta_0 + \beta_1 \times \text{BrandLinguisticsAwareness} + \\ & \beta_2 \times \text{SoundSymbolismAwareness} + \beta_3 \times \text{BrandNameImportance} + \\ & \beta_4 \times \text{NativeLanguageFamily} + \beta_5 \times \text{NativeLanguageFluency} + \\ & \beta_6 \times \text{EnglishLanguageFluency} + \beta_7 \times \text{OtherLanguageFamily} + \\ & \beta_8 \times \text{OtherLanguageFluency} + \beta_9 \times \text{Age} + \beta_{10} \times \text{Gender} + \beta_{11} \times \\ & \text{WeeklyShoppingBudget} \end{aligned}$$

In this model, “BrandNameChoice” is the dependent variable whose value is either 0 or 1, depending on the respondent’s answer to the brand name testing question. For instance, if the person picks “Fenter” as the answer for question 4 (“Which brand of laptop seems smaller?”), then the value of the dependent variable is 1 for that person; otherwise, it would be 0. “BrandLinguisticsAwareness” is a binary variable that takes the value of 1 if the respondent had heard about the term “Brand Linguistics” before taking the survey, and 0 if not. Similarly, “SoundSymbolismAwareness” is scored as 1 if the respondent had already heard about “Sound Symbolism” prior to the survey, and 0 otherwise. “NativeLanguageFamily” and “OtherLanguageFamily” are the numeric codes for the language families of the respondent’s native language and the other language spoken other than English, as explained above. “NativeLanguageFluency,” “EnglishLanguageFluency,” and “OtherLanguageFluency” are the categorical variables that show the degree of fluency of the respondent in the three types of languages they

might be fluent to in some degree. Also included in the logistic regression model were three general demographic variables, “Age,” “Gender,” and “WeeklyShoppingBudget” which is the average amount of money that the respondent spends on shopping per week.

Results

Taking a look at the mean of the average overall score for each brand name testing question category, it can be determined which brand name is more likely to be linked to a certain product attribute based on the linguistic characteristic that brand name contains. For example, for questions 4-7 which mention the attribute “smaller,” the first brand name options “Fenter,” “Yelta,” “Ingrel,” and “Lisap” (those with high-front vowels) are given a score of 1 over the score of 0 for the low-back vowel brand names (“Funter,” “Yolta,” “Ungrel,” and “Losap”). Therefore, if the mean overall score for the “smaller” category of all respondents is higher than 2.0, more than half of the respondent population assigned high-front vowel brand names with the characteristic of being “smaller,” which would be evidence in support of H1a.

In an effort to reduce bias, the order of appearance of the brand name choices was randomized. This was done in order to control for other factors influencing respondents’ choice within the survey field and reduce the probability that respondents would form a habit and always go for either the first or the second answer option. The different product attributes asked in the brand name testing questions create different expectations of how the mean overall score would look like for each category. For example, for the “darker” questions (questions 8-11), since H1b states high-front vowels sound “lighter,” the expectation is to see a mean score smaller than 2.0 for the hypothesis to hold. This is because questions 8-11 ask which brand of wine seems “darker” which is the opposite of

“lighter,” therefore the expected answers would be the low-back vowel brand names, i.e., the second options with score 0.

Table 5 gives the mean overall scores of all the brand name testing questions’ product attribute categories, along with the expected mean score that would indicate the hypothesis being supported. It can be seen that in general the empirical results from this study support the hypotheses in all testing categories.

Table 5: *Summary of Mean Overall Scores & Result on Hypotheses*

	Testing Hypothesis	Question Range	Mean Overall Score	Expected Mean Overall Score to Support the Hypothesis	Support/ Reject Hypothesis?
Smaller Questions Overall	1a	4 – 7	2.2361	> 2.0	Support
Darker Questions Overall	1b	8 – 11	1.6667	< 2.0	Support
Thicker Questions Overall	1c	12 – 15	1.7361	< 2.0	Support
Softer Questions Overall	2a	16 – 19	2.3662	> 2.0	Support
Sharper Questions Overall	2b	20 – 23	2.4143	> 2.0	Support
Tastier Questions Overall	3	24 – 27	2.1528	> 2.0	Support
More Masculine Questions Overall	4a	28 – 31	1.8310	< 2.0	Support
Heavier Questions Overall	4b	32 – 35	1.9859	< 2.0	Support
Faster Questions Overall	5a	36 – 39	2.0845	> 2.0	Support
Stronger Questions Overall	5b	40 – 43	2.1667	> 2.0	Support

The results of testing hypotheses 1-5 with respect to other language family membership of respondents using one-way ANOVA models are presented in Table 6a below. The model was fitted in IBM SPSS Statistics 23.0. The main prediction is that, if the hypotheses hold for each of the ten brand name testing categories, then there should not be any significant difference in the mean overall category score across the four language family groups, meaning there are no significant differences between interpreting the brand name linguistics between speakers of different language families.

Table 6a: *ANOVA Results Testing for Other Language Family Membership*

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
Small Questions Overall	Between Groups	8.687	3	2.896	2.045	.111
	Within Groups	174.195	123	1.416		
	Total	182.882	126			
Dark Questions Overall	Between Groups	9.887	3	3.296	2.025	.114
	Within Groups	200.207	123	1.628		
	Total	210.094	126			
Thick Questions Overall	Between Groups	4.041	3	1.347	.716	.544
	Within Groups	225.701	120	1.881		
	Total	229.742	123			
Soft Questions Overall	Between Groups	3.852	3	1.284	1.295	.279
	Within Groups	120.973	122	.992		
	Total	124.825	125			
Sharp Questions Overall	Between Groups	14.195	3	4.732	4.361	.006
	Within Groups	130.192	120	1.085		
	Total	144.387	123			
Tasty Questions Overall	Between Groups	3.068	3	1.023	.711	.547
	Within Groups	172.569	120	1.438		
	Total	175.637	123			
Heavy Questions Overall	Between Groups	4.321	3	1.440	1.226	.303
	Within Groups	142.111	121	1.174		
	Total	146.432	124			
Masculine Questions Overall	Between Groups	2.450	3	.817	.724	.540
	Within Groups	137.685	122	1.129		
	Total	140.135	125			
Fast Questions Overall	Between Groups	.051	3	.017	.016	.997
	Within Groups	127.156	122	1.042		
	Total	127.206	125			
Strong Questions Overall	Between Groups	1.601	3	.534	.474	.701
	Within Groups	138.383	123	1.125		
	Total	139.984	126			

From the model results, as most of the p-values in the significance column of the ANOVA output table from SPSS are higher than 0.1, we cannot reject the null hypothesis that there is no significant difference in the mean overall scores across the four other language families for most brand name testing categories. This means that, on average, there is not much difference in how speakers of the four language family groups, e.g., English-only speakers (no “other” language to record), Dravidian, Indo-European, and Others, interpret the linguistic characteristics of brand names. The only exception is for

H2b – fricatives vs. plosives as being “sharper” – associated with questions 20-23 of the “sharp” brand name testing category. For this category, the p-value is less than .01 (.006), suggesting that there is significant difference in the mean overall score of at least one of the four language family groups. This means that, on average, the speakers of at least one language group interpret whether fricatives sound “sharper” over plosives differently from the other groups, which results in the rejection of H2b.

Table 6b demonstrates the results of testing hypotheses 1-5 using another factor variable which is Native Language Families.

Table 6b: *ANOVA Results Testing for Native Language Family Membership*

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
Small Questions Overall	Between Groups	5.096	2	2.548	1.809	.168
	Within Groups	197.184	140	1.408		
	Total	202.280	142			
Dark Questions Overall	Between Groups	13.039	2	6.520	4.230	.016
	Within Groups	215.772	140	1.541		
	Total	228.811	142			
Thick Questions Overall	Between Groups	10.788	2	5.394	3.147	.046
	Within Groups	234.784	137	1.714		
	Total	245.571	139			
Soft Questions Overall	Between Groups	2.496	2	1.248	1.161	.316
	Within Groups	149.363	139	1.075		
	Total	151.859	141			
Sharp Questions Overall	Between Groups	9.622	2	4.811	4.379	.014
	Within Groups	150.514	137	1.099		
	Total	160.136	139			
Tasty Questions Overall	Between Groups	2.671	2	1.335	.972	.381
	Within Groups	189.514	138	1.373		
	Total	192.184	140			
Heavy Questions Overall	Between Groups	1.360	2	.680	.578	.562
	Within Groups	162.385	138	1.177		
	Total	163.745	140			
Masculine Questions Overall	Between Groups	.195	2	.098	.089	.915
	Within Groups	152.425	139	1.097		
	Total	152.620	141			
Fast Questions Overall	Between Groups	2.697	2	1.348	1.285	.280
	Within Groups	145.895	139	1.050		
	Total	148.592	141			
Strong Questions Overall	Between Groups	4.771	2	2.386	2.194	.115
	Within Groups	152.208	140	1.087		
	Total	156.979	142			

Following the same logic as above, the majority of the hypotheses hold, except for H1b, H1c, and H2b, as for the corresponding categories associated with testing these hypotheses, the p-values are less than .05 but greater than .01 (.016, .046, and .014, respectively), meaning these hypotheses of no significant difference can be rejected at 95% confidence level. In other words, when considering the families of native languages, on average there are significant differences in how speakers of one native language family interpret the “light” (H1b) and “thin” (H1c) aspects of brand names containing high-front vowel sounds as opposed to low-back vowel sounds, as well as the “sharp” (H2b) aspect of brand names containing fricatives as opposed to plosives.

Regarding the results of the logistic regression, the logistic regression model was fitted using each of the 40 binary brand name testing questions (questions 4-43) as the dependent variable. Accordingly, 40 model fits were attempted, and the resulting fitted models differ in terms of the significances of the coefficient estimates. Therefore, only some of the models with the best estimated coefficients which are the most helpful in predicting the speaker’s choice of brand name characteristics are reported.

Table 7a shows the result of the fitted logistic regression model on question 43 (“Which brand of medication seems stronger?”). The answer “Rezest” has a value of 1 while “Lezest” has a value of 0. According to the model fit output, the variable “BrandLinguisticsAwareness” has a negative coefficient estimate (-3.001) and is significant at 90% confidence level (p-value .075), implying that as compared to those who had not heard about “brand linguistics” before taking the survey, the ones who had heard about the term have a higher probability of identifying the second option, “Lezest,” as the “stronger” brand name. Meanwhile, the coefficient estimate of

“SoundSymbolismAwareness” is positive (3.271) and also significant at 90% confidence level (p-value .091), implying that people who had heard about “sound symbolism” before taking the survey have a higher probability to choose the first answer option, “Rezest,” as the “stronger” brand name. Similarly, the “BrandNameImportance” estimated coefficient is negative (-.987) and significant at 95% confidence level (p-value .034), suggesting that the more the person considers the brand name to be an important factor in making purchase decisions, the higher the probability that they will regard the second option, “Lezest,” as being stronger. In addition, both the “OtherLanguageFamily2” (shown as “OtherLanguageFamiliesRecoded(2)” in the output table) and “OtherLanguageFamily3” (“OtherLanguageFamiliesRecoded(3)” in the output table) have positive coefficient estimates (5.147 and 4.282) and are significant at 95% confidence level (p-values .022 and .040); this means that, compared to the language family 0, i.e., English-speaking only, the speakers of the second language family (Indo-European) and the third language family (Others) have higher probability to perceive “Rezest” as the stronger brand name.

Table 7a: *Logistic Regression Model Fitted for Question 43*

	B	S.E.	Wald	df	Sig.	Exp(B)
<i>BrandLinguisticsAwareness</i>	-3.001	1.683	3.180	1	.075	.050
<i>SoundSymbolismAwareness</i>	3.271	1.935	2.858	1	.091	26.342
<i>BrandNameImportance</i>	-.987	.466	4.483	1	.034	.373
<i>NativeLanguageFamily</i>			4.853	2	.088	
<i>NativeLanguageFamily1</i>	-.279	1.653	.028	1	.866	.757
<i>NativeLanguageFamily2</i>	1.651	1.466	1.269	1	.260	5.214
<i>NativeLanguageFluency</i>	.213	.624	.116	1	.733	1.237
<i>EnglishLanguageFluency</i>	-.906	.646	1.966	1	.161	.404
<i>OtherLanguageFamily</i>			5.608	3	.132	
<i>OtherLanguageFamily1</i>	-2.628	2.831	.862	1	.353	.072
<i>OtherLanguageFamily2</i>	5.147	2.243	5.264	1	.022	171.937
<i>OtherLanguageFamily3</i>	4.282	2.081	4.232	1	.040	72.361
<i>OtherLanguageFluency</i>	-1.295	.847	2.336	1	.126	.274
<i>Age</i>	-.068	.062	1.198	1	.274	.934
<i>Gender (Male compared to Female)</i>	.035	.818	.002	1	.966	1.036
<i>WeeklyShoppingBudget</i>	.661	.472	1.962	1	.161	1.937
Constant	7.714	4.972	2.407	1	.121	2239.259

Table 7b shows the result of the fitted logistic regression model on question 23 (“Which brand of knife seems sharper?”). The answer “Zaloron” has a value of 1 while “Baloron” has a value of 0. Following the same logic as above, the variable “BrandLinguisticsAwareness” has a positive coefficient estimate (2.728) and is significant at 90% confidence level (p-value .083), implying that the ones who had heard about “brand linguistics” have a higher probability of identifying “Zaloron” as the “sharper” knife brand name, as compared to those who had not heard about the term beforehand. The coefficient estimate of “BrandNameImportance” is negative (-1.482) and significant at 95% confidence level (p-value .016), suggesting that the more the

person considers brand name to be an important factor in making purchase decisions, the higher probability it is that they will regard “Baloron” as being “sharper.” Regarding the language profiles, “NativeLanguageFluency” has a positive coefficient estimate (2.249) and is significant at 95% confidence level (p-value .017), indicating that the more fluent a person is in their native language, the higher chance they will recognize “Zaloron” as the “sharper” brand name.

Table 7b: *Logistic Regression Model Fitted for Question 23*

	B	S.E.	Wald	df	Sig.	Exp(B)
<i>BrandLinguisticsAwareness</i>	2.728	1.574	3.005	1	.083	15.304
<i>SoundSymbolismAwareness</i>	-1.878	1.556	1.456	1	.228	.153
<i>BrandNameImportance</i>	-1.482	.618	5.749	1	.016	.227
<i>NativeLanguageFamily</i>			.869	2	.648	
<i>NativeLanguageFamily1</i>	-1.739	1.923	.818	1	.366	.176
<i>NativeLanguageFamily2</i>	-1.532	1.718	.795	1	.373	.216
<i>NativeLanguageFluency</i>	2.249	.943	5.691	1	.017	9.479
<i>EnglishLanguageFluency</i>	.224	.667	.113	1	.737	1.251
<i>OtherLanguageFamily</i>			.031	3	.999	
<i>OtherLanguageFamily1</i>	-.292	5.845	.002	1	.960	.747
<i>OtherLanguageFamily2</i>	-.015	5.661	.000	1	.998	.985
<i>OtherLanguageFamily3</i>	-.216	5.650	.001	1	.970	.806
<i>OtherLanguageFluency</i>	-.613	.585	1.095	1	.295	.542
<i>Age</i>	.021	.074	.084	1	.772	1.022
<i>Gender (Male compared to Female)</i>	-.085	1.017	.007	1	.933	.919
<i>WeeklyShoppingBudget</i>	-.355	.532	.447	1	.504	.701
Constant	-2.649	7.230	.134	1	.714	.071

Table 7c shows the result of the fitted logistic regression model on question 25 (“Which brand of chocolate seems tastier?”). The first option “Melar” is coded as 1 and the second, “Nelar,” is 0. Looking at the model fit output, as a person becomes more fluent in their native language, they are more likely to feel “Melar” sounds “tastier,” as the estimated coefficient of “NativeLanguageFluency” is positive (1.502) and significant at 95% confidence level (p-value .015). In addition, it is interesting to see that, compared to the female gender, a male speaker is more likely to think “Nelar” is “tastier,” since the “Gender” estimated coefficient is negative (-2.044) and significant at 95% confidence level (p-value .013).

Table 7c: *Logistic Regression Model Fitted for Question 25*

	B	S.E.	Wald	df	Sig.	Exp(B)
<i>BrandLinguisticsAwareness</i>	-1.617	1.372	1.389	1	.239	.198
<i>SoundSymbolismAwareness</i>	2.511	1.563	2.581	1	.108	12.316
<i>BrandNameImportance</i>	.364	.400	.825	1	.364	1.439
<i>NativeLanguageFamily</i>			.368	2	.832	
<i>NativeLanguageFamily1</i>	-.591	1.349	.192	1	.661	.554
<i>NativeLanguageFamily2</i>	-.701	1.158	.366	1	.545	.496
<i>NativeLanguageFluency</i>	1.502	.620	5.871	1	.015	4.489
<i>EnglishLanguageFluency</i>	-.327	.487	.451	1	.502	.721
<i>OtherLanguageFamily</i>			.972	3	.808	
<i>OtherLanguageFamily1</i>	-.585	2.180	.072	1	.788	.557
<i>OtherLanguageFamily2</i>	1.591	1.915	.691	1	.406	4.911
<i>OtherLanguageFamily3</i>	1.004	1.727	.338	1	.561	2.729
<i>OtherLanguageFluency</i>	-.336	.516	.424	1	.515	.715
<i>Age</i>	-.059	.052	1.279	1	.258	.942
<i>Gender (Male compared to Female)</i>	-2.044	.820	6.211	1	.013	.129
<i>WeeklyShoppingBudget</i>	.307	.369	.694	1	.405	1.359
Constant	-3.967	3.831	1.072	1	.300	.019

From the above different outputs of fitted logistic regression models, it can be observed that various factors can have influence on one's attitude towards and perception of a brand. Depending on the specific question, some factors might have more significant impacts than others, but there is evidence of correlation between several of these, as detailed above.

DISCUSSION

Based on the empirical results of the main study, all ten hypotheses were supported. This is to say that the majority of survey respondents were able to correctly associate each product attribute with the brand name that contained the linguistic aspect believed to provide cues about the intended product attribute. These results support the principles of brand linguistics and sound symbolism, as through their answers to the survey questions the respondents in general chose the brand names that aligned with expectations based on these linguistic frameworks.

In addition to the main study which used the entire sample size collected, the same ten hypotheses were tested against two subgroups of the sample: other language families and native language families. This was done to test whether certain groups (based on which language families the respondents' native languages and other languages spoken belonged to) answered the questions a certain way, e.g., the responses of people from one language family group aligned more with linguistic expectations than those of other language family groups. In these cases, the null hypothesis was that there were no significant differences across language family groups in the mean overall scores of the same product attributes used in the main study. Consequently, for the other language families subgroup, the results showed to be insignificant across all categories except for

the “sharp” attribute, as its p-value was less than .01 and therefore significant at the 99% confidence level. In this case the null hypothesis was rejected, and this shows that at least one other language family group interpreted whether fricatives sound “sharper” than plosives differently than the rest of the groups. Similarly, for the native language families subgroup, the majority of categories were not significant at the 90% confidence level, but there were three areas that were significant. These were “dark,” “thick,” and “sharp,” all significant at the 95% confidence level as their p-values were less than .05 but greater than .01. In these three cases, the null hypothesis was rejected, as these results indicate that there are significant differences in the way at least one of the native language families groups responded to questions in these three categories.

The greatest limitation of this study was a time constraint. In order to meet deadlines and the submission criteria, data was collected over a period of only five days. Because of this, the sample contained only 267 useful responses (ten others contained missing responses and had to be discarded). An increased sample size would have allowed for perhaps more meaningful data as more respondents would have participated, and generally the larger the sample the more reliable it can become in terms of predicting the sample mean of the population of all consumers who might face these questions.

Another possible limitation lies in the design of the testing of the subgroups of native language families and other language families. When choosing the language families subgroups, only the language families with the four (other language families) or three (native language families) highest number of respondent membership were included, and there was a group labeled “Others” for both of these subgroups which contained multiple language families that had the smallest number of respondents as

members. For both of these “Others” groups, it is possible that at least one of the language family groups may have answered questions significantly differently from other language family groups, but because their responses were combined with those of other language family groups those effects may have been diminished and resulted to be insignificant instead. However, the likelihood of this is not too high because the language families that comprise the “Others” category only had between one and four respondents belonging to the individual language family groups within the aggregate “Others” group. It also might have been more interesting and/or useful to group by the language subfamily rather than the language family (see Appendix B), but this would have required more different groups and it is unclear how this would affect the results.

The significance of this project has three dimensions. First, the greatest and most direct and obvious contribution that could be made to marketing practice is discovering new links between brand names and their preferability amongst consumers. This information could help companies wanting to come up with their own brand name, as knowing of any existing links between language and branding could help companies decide what kind of names would make them more successful and which they should avoid. Secondly, the survey that was conducted and the data and conclusions stemming from that are original and add unique information to the existing literature because there have been no documented tests of how consumers’ native language and other languages spoken impact their brand perceptions and attitudes. Lastly, it could also encourage more studies within brand linguistics as well as other related cross-cultural studies because such distinct information is useful and applicable to so many aspects of life, especially in an increasingly globalized world, and has many implications for the world of business.

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APPENDICES

Appendix A: Full, Coded Survey

Brand Name Importance, Brand Linguistics/Sound Symbolism (3 ?s)

1. How important is the brand name to you when making purchase decisions?
Extremely Important (5)
Very Important (4)
Moderately Important (3)
Slightly Important (2)
Not at all Important (1)
 2. Before this survey, had you heard of the term “brand linguistics”?
Yes (1) No (0)
 3. Before this survey, had you heard of the term “sound symbolism”?
Yes (1) No (0)
-

Brand Name Testing (40 ?s; preferred answers to support the hypotheses are marked *)

4. Which brand of laptop seems smaller?
Fenter (1)* Funter (0)
 5. Which brand of laptop seems smaller?
Yelta (1)* Yolta (0)
 6. Which brand of laptop seems smaller?
Ingrel (1)* Ungrel (0)
 7. Which brand of laptop seems smaller?
Lisap (1)* Losap (0)
-
8. Which brand of wine seems darker in color?
Tentil (1) Tuntil (0)*
 9. Which brand of wine seems darker in color?
Leda (1) Loda (0)*
 10. Which brand of wine seems darker in color?
Tirp (1) Turp (0)*
 11. Which brand of wine seems darker in color?
Piron (1) Poron (0)*
-

12. Which brand of tomato sauce seems thicker?
Vegera (1) Vugera (0)*

13. Which brand of tomato sauce seems thicker?
Semiri (1) Somiri (0)*
14. Which brand of tomato sauce seems thicker?
Ristono (1) Rustono (0)*
15. Which brand of tomato sauce seems thicker?
Bindeli (1) Bondeli (0)*
-

16. Which brand of bedsheet seems softer?
Fexil (1)* Pexil (0)
17. Which brand of bedsheet seems softer?
Silant (1)* Tilant (0)
18. Which brand of bedsheet seems softer?
Valir (1)* Balir (0)
19. Which brand of bedsheet seems softer?
Zorem (1)* Dorem (0)
-

20. Which brand of knife seems sharper?
Folade (1)* Tolade (0)
21. Which brand of knife seems sharper?
Serat (1)* Perat (0)
22. Which brand of knife seems sharper?
Veniri (1)* Deniri (0)
23. Which brand of knife seems sharper?
Zaloron (1)* Baloron (0)
-

24. Which brand of chocolate seems tastier?
Albim (1)* Albin (0)
25. Which brand of chocolate seems tastier?
Melar (1)* Nelar (0)
26. Which brand of chocolate seems tastier?
Comoro (1)* Conoro (0)
27. Which brand of chocolate seems tastier?
Tammil (1)* Tannil (0)
-

28. Which brand of pen seems heavier?
Tsanop (1) Dzanop (0)*
29. Which brand of pen seems heavier?
Chalark (1) Jalark (0)*

30. Which brand of pen seems heavier?

Tarnats (1) Tarnadz (0)*

31. Which brand of pen seems heavier?

Pelech (1) Pelej (0)*

32. Which brand of cologne seems more masculine?

Tsulo (1) Dzulo (0)*

33. Which brand of cologne seems more masculine?

Chendere (1) Jendere (0)*

34. Which brand of cologne seems more masculine?

Emets (1) Emedz (0)*

35. Which brand of cologne seems more masculine?

Dorach (1) Doraj (0)*

36. Which brand of automobile seems faster?

Wender (1)* Yender (0)

37. Which brand of automobile seems faster?

Wiston (1)* Liston (0)

38. Which brand of automobile seems faster?

Raxa (1)* Yaxa (0)

39. Which brand of automobile seems faster?

Rumenz (1)* Lumenz (0)

40. Which brand of medication seems stronger?

Wibsen (1)* Yibsen (0)

41. Which brand of medication seems stronger?

Wipord (1)* Lipord (0)

42. Which brand of medication seems stronger?

Rantimen (1)* Yantimen (0)

43. Which brand of medication seems stronger?

Rezest (1)* Lezest (0)

Demographics (11 ?s)

44. On average, how much money do you spend in a week on all purchases?

<\$50(1) \$50-\$100(2) \$100-\$200(3) \$200-\$400(4) >\$400(5)

45. Are you fluent to some degree in any other languages besides English?

Yes (1) No (0)

46. What is your native language?
(drop-down menu)
47. What is your degree of fluency in your native language?
Terrible (1) Poor (2) Average (3) Good (4) Excellent (5)
48. How would you rate your fluency in the English language?
Terrible (1) Poor (2) Average (3) Good (4) Excellent (5)
49. Do you know any other languages?
Yes (1) No (0)
50. Enter the name(s) of the other language(s) you know and your degree of fluency below.
- | | | | | | |
|--------|--------------|----------|-------------|----------|---------------|
| _____: | Terrible (1) | Poor (2) | Average (3) | Good (4) | Excellent (5) |
| _____: | Terrible (1) | Poor (2) | Average (3) | Good (4) | Excellent (5) |
| _____: | Terrible (1) | Poor (2) | Average (3) | Good (4) | Excellent (5) |
-
51. Please state your age.
(enter #)
52. What is your gender?
Male (0) Female (1) Non-binary (2) Prefer not to share (3)
53. If you know specifically which countries are part of your ethnic background, please enter them below, separated by commas.
- _____
54. From the options below, select all that apply to you.
- White or Caucasian (1)
 - Black or African American (2)
 - American Indian or Alaska Native (3)
 - Asian (4)
 - Native Hawaiian or Other Pacific Islander (5)
 - Hispanic or Latino (6)
 - Other (please specify) (7)

Appendix B: Other Language Family Code & Native Language Family Code

Other Language	Other Language Subfamily	Other Language Family	Other Language Family Code
English	Germanic	Indo-European	0
Malayalam	Southern	Dravidian	1
Tamil	Southern	Dravidian	1
Telugu	Southern	Dravidian	1
Croatian	Balto-Slavic	Indo-European	2
Dutch	Germanic	Indo-European	2
French	Italic-Romance	Indo-European	2
German	Germanic	Indo-European	2
Hindi	Indo-Iranian	Indo-European	2
Italian	Italic-Romance	Indo-European	2
Punjabi	Indo-Iranian	Indo-European	2
Russian	Balto-Slavic	Indo-European	2
Spanish	Italic-Romance	Indo-European	2
Arabic	Semetic	Afro-Asiatic	3
Hebrew	Semetic	Afro-Asiatic	3
Hungarian	-	Uralic	3
Japanese	-	Japonic	3
Korean	-	Koreanic	3
Turkish	Southern	Turkic	3

Native Language	Native Language Subfamily	Native Language Family	Native Language Family Code
Malayalam	Southern	Dravidian	1
Tamil	Southern	Dravidian	1
Afrikaans	Germanic	Indo-European	2
Albanian	Albanian	Indo-European	2
Armenian	Armenian	Indo-European	2
Czech	Balto-Slavic	Indo-European	2
English	Germanic	Indo-European	2
French	Italic-Romance	Indo-European	2
Greek	Greek	Indo-European	2
Hindi	Indo-Iranian	Indo-European	2
Italian	Italic-Romance	Indo-European	2
Nepali	Indo-Iranian	Indo-European	2
Polish	Balto-Slavic	Indo-European	2
Portuguese	Italic-Romance	Indo-European	2
Romanian	Italic-Romance	Indo-European	2
Russian	Balto-Slavic	Indo-European	2
Serbian	Balto-Slavic	Indo-European	2
Spanish	Italic-Romance	Indo-European	2
Urdu	Indo-Iranian	Indo-European	2
Amharic	Semetic	Afro-Asiatic	3
Arabic (Levantine)	Semetic	Afro-Asiatic	3
Burmese	Tibeto-Burman	Sino-Tibetan	3
Thai	Kam-Tai	Tai-Kadai	3
Vietnamese	Mon-Khmer	Austro-Asiatic	3